What is claimed is:

1. A method of creating a compressed file for use in an electronic RFQ, comprising:

(a) receiving an electronic file for use in the electronic RFQ;

(b) if the received file is a text-based file with links, extracting link information from the file and storing the extracted link information in an output file;

(c) if the received file is a CAD file, extracting ISO symbol information from the file and storing the extracted symbol information in an output file;

(d) converting the received file to a raster image; and

(e) compressing the raster image into an electronic RFQ format file;

whereby, if an output file was created in step (b) or (c), the output file is used to generate a separate display layer that will display extracted information, and whereby the separate display layer is inserted into the electronic RFQ format file.

2. The method of claim 1, whereby the text-based file is a PDF file.

3. The method of claim 1, wherein step (b) additionally comprises:

(b) if the file is a text-based file with links,

(i) if the file is not a PDF file, converting the text-based file to a PDF file that includes the links;

(ii) extracting link information from the PDF file; and

(iii)storing the extracted link information in an output file.

4. The method of claim 1, wherein the compression in step (e) is a wavelet-based compression.

5. The method of claim 1, wherein the raster image is in TIFF format.

6. The method of claim 1, wherein the raster image is in BMP format.

7. A system for creating compressed files for use in an electronic RFQ, wherein the system receives electronic files for use in the electronic RFQ, comprising:

means for extracting link information from a text-based file and storing extracted link information in an output file;

means for extracting ISO symbol information from a CAD file and storing extracted symbol information in an output file;

means for converting the file to a raster image;

means for compressing the raster image into an electronic RFQ format file;

means for generating a separate display layer that will display extracted information; and

means for inserting the separate display layer into the electronic RFQ format file.

8. A machine-readable medium that includes instructions for creating a compressed file for use in an electronic RFQ, wherein such instructions, when executed by a processor, cause the processor to:

receive an electronic file for use in an electronic RFQ;

extract link information from the received file and store extracted link information in an output file, if the received file is a text-based file with links,

extract ISO symbol information from the file and store extracted symbol information in an output file, if the received file is a CAD file;

convert the file to a raster image;

compress the raster file into an electronic RFQ format file;

generate a separate display layer that will display extracted information and insert the separate display layer into the electronic RFQ format file, if information was extracted from the file

9. A method of compressing a CAD file that contains ISO symbols into an RFQ format file, whereby displaying the RFQ format file will cause the information stored in the ISO symbols to be displayed in a CTQ layer, comprising:

(a) receiving a drawing in a CAD file;

(b) parsing ISO symbol information from the drawing in the CAD file and storing the symbol information in a symbol output file;

(c) converting the drawing into a raster image;

(d) compressing the raster image to an RFQ format file; and

(e) inserting information from the symbol output file into the RFQ format file as a separate display layer, such that the symbol information is displayed as a CTQ layer in the RFQ format file.

extracted, link extraction process 551 will create a section in the output file for the current page at 561. The link extraction process deals with each link sequentially, as shown by steps 570-575-580. At step 570, the properties of the current link are written to the output file for this page. These properties may include page number, link number, coordinates of the top of the link region, coordinates of the left of the link region, width of the link region, height of the link region, color of the link and type of link, for example.

After each link on the current page has been processed, the current page is rasterized at step 552. If there were no links to be extracted on the page, it is simply rasterized at step 552 without initiating process 551. The rasterized image is converted to the compressed RFQ format at 553 and saved at 554. Each page of the document is processed as shown by loop 515-551-552-553-554-585 and 541.

When there are no more pages in the document, the link output file is closed at 585. If any link information was extracted from the document, it is used to create a display layer or layers in the RFQ compressed file at step 590-591. This link information is determined by reading the link output file that was created in the earlier part of the process.

Two embodiments for extracting, saving and reinserting link information as a separate display layer have been shown in Figs 4A and 4B. Other implementations will be obvious to those skilled in the art, and are intended to come within the scope of the present invention.

Link information for every link in the document may be extracted. Alternatively, the extraction process may extract and save link information only for certain types of

links. For example, only links that perform certain actions may have link information extracted. In one preferred embodiment, only links to other documents within the RFQ or URLs to Internet locations are extracted. In addition, the display layer that is generated may utilize all of the extracted information, or it may only utilize some of the extracted information.

An example of a file created using the above described process is shown in Fig. 6.

Extracting ISO symbols from engineering drawings

Parts in CAD engineering drawings frequently have International Standards Organization (ISO) symbols, which specify features about the part such as diameter, perpendicularity or concentricity. The symbols on a drawing provide information that is useful for determining the manufacturing processes or supplier capabilities required for manufacturing the part. For example, a TIR concentricity symbol may indicate a centerless grinding operation is required.

When a drawing in a CAD file is rasterized, some of this information is lost. Therefore, in the system of the present invention, the ISO symbol information is extracted before the engineering drawing is rasterized. Alternatively, as creating a separate output file for a raster image of a drawing does not affect the original CAD file, the extraction process could occur after the drawing has been rasterized. Symbol information is parsed out of CAD files and may be stored in a separate output file, or may be stored in memory. The extracted symbol information may be stored in the output file as it is stored in the CAD file, or certain information may be inferred from the symbol information and stored. Using the above example, a concentricity symbol may indicate a

centerless grinding operation is required for manufacture. The concentricity information may be stored alone, or information about the required manufacturing operation may be stored with the symbol information.

This output file is used to create display layers or overlays, such as a CTQ layer, for display with the engineering drawing using the viewing application of the present invention.

The basic process for converting an engineering drawing into the electronic RFQ format of the present invention is shown in Fig. 5. Block 605 illustrates an engineering drawing in a raster format file, or one that is scanned to create a raster image file. For these drawings, there is no ISO symbol information to extract. In this case, the raster image preferably goes through "geometric bounding" as shown by 630.

For raster image files, geometric bounding clips anything that is outside the defined drawing area such that, when viewed, the entire image will be shown without extraneous noise. Geometric bounding is useful for paper drawings that may have stains or other spots outside the engineering drawing area, but still on the scanned image. The clipped drawing is then saved in the common raster format, such as TIFF, at 640, and compressed into the RFQ format of the present invention at 650.

For CAD engineering drawings 601, the ISO symbol information is extracted as shown at 610. In this process, the converter reads the CAD file and searches for ISO symbol information. This information is typically stored as ASCII text strings in the CAD file. The symbol information typically includes a location, type and associated text for each symbol.

The ASCII strings in the CAD file representing symbol information are typically encoded and therefore not very user-friendly. Therefore, an optional routine will return a text description of the symbol's ASCII text string that may be used for display in a CTQ or other layer. The symbol information may also be used to determine required manufacturing processes, and this information may also be shown on a CTQ layer.

Symbol information may additionally be stored in a separate CTQ file, which is then used by the viewing application of the present invention to generate an overlay layer on the drawing or as input to other processes. In addition, textual information associated with a symbol may be added, or substituted for the symbol in this CTQ file.

In one embodiment of the present invention, the CTQ text may be separated into separate layers based upon the classification of the text. For example, "annotation", "dimensions" and "tolerances" may all be separate CTQ layers. Each of the classification layers may be highlighted in a different color, or turned on and off individually by the viewer.

By displaying symbol information on a separate layer in the viewing application, it can be shown in a different color, so that the manufacturing information is highlighted, for example. Manufacturing requirements are important to suppliers reviewing the RFQ, and by highlighting them, the suppliers are more easily able to discern requirements, and determine whether to bid on a part.

The system and method of the present invention may also use ISO symbol information to indicate the manufacturing process capabilities associated with a particular part. The system of the present invention may validate the output file with rules to process the symbol text strings, and convert to process capabilities. For example, parts

that have a certain finish may be combined to determine which parts need a grinding operation. These parts may then be highlighted in a particular color in a CTQ display layer.

The symbol information may also be stored in a part attribute database. This is useful in the case that supplier information is stored in a supplier capability database. By having both of these databases, a buyer's purchase requirement can automatically be matched with suppliers with that capability.

In CAD files, construction geometry, such as lines and points, may sometimes be very far off the drawing itself. Therefore, when the CAD file is rasterized, it includes this data. When the raster image is displayed, the software displaying it tries to show the entire image on the screen– including the construction geometry – and the drawing may end up very small relative to the display on the computer screen if the construction geometry is far off the drawing. Therefore, as shown by 630, the method and system of the present invention provides "geometric bounding" for CAD files as well as raster images files, as discussed above.

For CAD files, geometric bounding defines the area that the drawing should be contained to, and deletes any objects outside that area. The engineering drawings are then rasterized at step 640.

The raster image is compressed into the standard RFQ format at 650. Any associated CTQ display layers may be inserted into this RFQ compressed file.

RFQ file decompression and display

The present invention also provides a single software application to decompress and display the RFQ compressed files. No matter what the original file type was, when an RFQ document is delivered as part of the electronic RFQ generated by the inventive system, the viewing application can be used to decompress and view the document. The same single software application can be used for RFQs delivered on a Website or on a CD.

The viewing application that supports the display of files compressed using the inventive method and system is preferably implemented as a fast-loading browser plug-in. The viewing application plug-in is preferably compatible with all commercially available browsers, such as Microsoft Internet Explorer(IE) and Netscape Communicator. It provides the user with the ability to "see" links, and to activate the connected object. The "look and feel" of the links when viewing the compressed file is preferably consistent with standard browsers. The viewing application also displays information determined by extracted symbol information as one or more CTQ layers that overlay the engineering drawing and typically highlight manufacturing requirements. The viewing application provides the user with the ability to toggle the display of any layer.

The viewing application preferably provides basic navigation controls, such as pan and zoom, and has standard document viewing and printing features such as paging and batch print. The viewing application preferably provides the ability for an external application to pass in parameters that enable and disable its various functions via a Command line or CGI interface.

For a document that had link information extracted and saved to the RFQ format file as described above, the viewing application preferably highlights the region around the link in the document when the user's cursor passes over the link. The link's region was saved when the link information was extracted, as described above. For example, if the user left-clicks on the region when using the viewing application of the present invention, the link's connection information is evaluated by the viewing application. This connection information was also extracted and saved in the RFQ format file for the document, as described above. If the extracted link information indicates that the link is to an external URL, for example, the new location is preferably displayed in a web browser with no change to the image displayed in the viewing application. If the link is an internal link, for example, when the user left-clicks on the link region, the new page or document is preferably displayed by the viewing application.

While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

preferably provides an interface that accepts a page number and returns the number of links on the page, and an interface for accepting a page number and a link number and returning all relevant information for the link including location, region and connected object. The component may be used to build the same file as the standalone application.

One embodiment of the process for converting a document to a compressed electronic RFQ format file of the present invention is shown in Fig. 4A, and an alternative embodiment is shown in Fig. 4B. The embodiment shown in Fig. 4A illustrates a method that creates a separate link output file for each page in a document, and the embodiment shown in Fig. 4B illustrates a method that creates a single link output file for a document that has a separate section for each page in the document.

As shown in each embodiment, the document is opened for processing at step 505. As discussed above, the document is preferably a PDF format file. The process looks at each page within the document individually to extract the links. As illustrated in Fig. 4A, if the process creates a separate output file for each page in the document, it first determines if the current page has links. If there are no links on this page, then the page is simply rasterized, as shown by 515-520. As discussed above, the rasterized image may be in TIFF format. However, if there are links in the page, the links are extracted by link extraction process 550, and the page is rasterized at 520.

Extraction process 550 in Fig. 4A illustrates a method for creating a separate output file for each page within a document. In the embodiment shown in Fig. 4A, an output file is created for each page of the document that contains links. In the extraction process 550 in Fig. 4A, an output file is created and opened at 560 when the process determines that link information is to be extracted for this page. Preferably, the file is

named such that it can be related back to this page of the document. The link extraction process deals with each link sequentially, as shown by steps 570-575-580. At step 570, the properties of the current link are written to the output file for this page. These properties may include page number, link number, coordinates of the top of the link region, coordinates of the left of the link region, width of the link region, height of the link region, color of the link and type of link, and DPI, for example.

After each link on the page has been processed, the output file is closed at 585, and the page is rasterized at 520. The raster file is compressed into the electronic RFQ format at step 525. If the current page had link information extracted, it is inserted into the electronic RFQ file at step 535 as a separate display layer in the RFQ file for this page. The next page in the PDF file is then processed, until every page has been processed.

The process shown in Fig. 4A will create an electronic RFQ format file for every page of an input file. The viewing application of the present invention will read these files and display the raster image of the page with an overlay that contains the link information. The display of this link overlay can be toggled on and off in the viewing application. Users of the viewing application of the present invention will be able to see and use the links in a similar manner to using a PDF file viewing software to view the original PDF document.

The process shown in Fig. 4B illustrates an alternative method whereby a single link output file is created for a document instead of creating an output file for each page within the document. In this method, the output file is opened at 507. Each page of the document is then processed. If the current page has link information that needs to be

extracted, link extraction process 551 will create a section in the output file for the current page at 561. The link extraction process deals with each link sequentially, as shown by steps 570-575-580. At step 570, the properties of the current link are written to the output file for this page. These properties may include page number, link number, coordinates of the top of the link region, coordinates of the left of the link region, width of the link region, height of the link region, color of the link and type of link, for example.

After each link on the current page has been processed, the current page is rasterized at step 552. If there were no links to be extracted on the page, it is simply rasterized at step 552 without initiating process 551. The rasterized image is converted to the compressed RFQ format at 553 and saved at 554. Each page of the document is processed as shown by loop 515-551-552-553-554-585 and 541.

When there are no more pages in the document, the link output file is closed at 585. If any link information was extracted from the document, it is used to create a display layer or layers in the RFQ compressed file at step 590-591. This link information is determined by reading the link output file that was created in the earlier part of the process.

Two embodiments for extracting, saving and reinserting link information as a separate display layer have been shown in Figs 4A and 4B. Other implementations will be obvious to those skilled in the art, and are intended to come within the scope of the present invention.

Link information for every link in the document may be extracted. Alternatively, the extraction process may extract and save link information only for certain types of

links. For example, only links that perform certain actions may have link information extracted. In one preferred embodiment, only links to other documents within the RFQ or URLs to Internet locations are extracted. In addition, the display layer that is generated may utilize all of the extracted information, or it may only utilize some of the extracted information.

An example of a file created using the above described process is shown in Fig. 6.

Extracting ISO symbols from engineering drawings

Parts in CAD engineering drawings frequently have International Standards Organization (ISO) symbols, which specify features about the part such as diameter, perpendicularity or concentricity. The symbols on a drawing provide information that is useful for determining the manufacturing processes or supplier capabilities required for manufacturing the part. For example, a TIR concentricity symbol may indicate a centerless grinding operation is required.

When a drawing in a CAD file is rasterized, some of this information is lost. Therefore, in the system of the present invention, the ISO symbol information is extracted before the engineering drawing is rasterized. Alternatively, as creating a separate output file for a raster image of a drawing does not affect the original CAD file, the extraction process could occur after the drawing has been rasterized. Symbol information is parsed out of CAD files and may be stored in a separate output file, or may be stored in memory. The extracted symbol information may be stored in the output file as it is stored in the CAD file, or certain information may be inferred from the symbol information and stored. Using the above example, a concentricity symbol may indicate a

centerless grinding operation is required for manufacture. The concentricity information may be stored alone, or information about the required manufacturing operation may be stored with the symbol information.

This output file is used to create display layers or overlays, such as a CTQ layer, for display with the engineering drawing using the viewing application of the present invention.

The basic process for converting an engineering drawing into the electronic RFQ format of the present invention is shown in Fig. 5. Block 605 illustrates an engineering drawing in a raster format file, or one that is scanned to create a raster image file. For these drawings, there is no ISO symbol information to extract. In this case, the raster image preferably goes through "geometric bounding" as shown by 630.

For raster image files, geometric bounding clips anything that is outside the defined drawing area such that, when viewed, the entire image will be shown without extraneous noise. Geometric bounding is useful for paper drawings that may have stains or other spots outside the engineering drawing area, but still on the scanned image. The clipped drawing is then saved in the common raster format, such as TIFF, at 640, and compressed into the RFQ format of the present invention at 650.

For CAD engineering drawings 601, the ISO symbol information is extracted as shown at 610. In this process, the converter reads the CAD file and searches for ISO symbol information. This information is typically stored as ASCII text strings in the CAD file. The symbol information typically includes a location, type and associated text for each symbol.

The ASCII strings in the CAD file representing symbol information are typically encoded and therefore not very user-friendly. Therefore, an optional routine will return a text description of the symbol's ASCII text string that may be used for display in a CTQ or other layer. The symbol information may also be used to determine required manufacturing processes, and this information may also be shown on a CTQ layer.

Symbol information may additionally be stored in a separate CTQ file, which is then used by the viewing application of the present invention to generate an overlay layer on the drawing or as input to other processes. In addition, textual information associated with a symbol may be added, or substituted for the symbol in this CTQ file.

In one embodiment of the present invention, the CTQ text may be separated into separate layers based upon the classification of the text. For example, "annotation", "dimensions" and "tolerances" may all be separate CTQ layers. Each of the classification layers may be highlighted in a different color, or turned on and off individually by the viewer.

By displaying symbol information on a separate layer in the viewing application, it can be shown in a different color, so that the manufacturing information is highlighted, for example. Manufacturing requirements are important to suppliers reviewing the RFQ, and by highlighting them, the suppliers are more easily able to discern requirements, and determine whether to bid on a part.

The system and method of the present invention may also use ISO symbol information to indicate the manufacturing process capabilities associated with a particular part. The system of the present invention may validate the output file with rules to process the symbol text strings, and convert to process capabilities. For example, parts

that have a certain finish may be combined to determine which parts need a grinding operation. These parts may then be highlighted in a particular color in a CTQ display layer.

The symbol information may also be stored in a part attribute database. This is useful in the case that supplier information is stored in a supplier capability database. By having both of these databases, a buyer's purchase requirement can automatically be matched with suppliers with that capability.

In CAD files, construction geometry, such as lines and points, may sometimes be very far off the drawing itself. Therefore, when the CAD file is rasterized, it includes this data. When the raster image is displayed, the software displaying it tries to show the entire image on the screen– including the construction geometry – and the drawing may end up very small relative to the display on the computer screen if the construction geometry is far off the drawing. Therefore, as shown by 630, the method and system of the present invention provides "geometric bounding" for CAD files as well as raster images files, as discussed above.

For CAD files, geometric bounding defines the area that the drawing should be contained to, and deletes any objects outside that area. The engineering drawings are then rasterized at step 640.

The raster image is compressed into the standard RFQ format at 650. Any associated CTQ display layers may be inserted into this RFQ compressed file.

RFQ file decompression and display

The present invention also provides a single software application to decompress and display the RFQ compressed files. No matter what the original file type was, when an RFQ document is delivered as part of the electronic RFQ generated by the inventive system, the viewing application can be used to decompress and view the document. The same single software application can be used for RFQs delivered on a Website or on a CD.

The viewing application that supports the display of files compressed using the inventive method and system is preferably implemented as a fast-loading browser plug-in. The viewing application plug-in is preferably compatible with all commercially available browsers, such as Microsoft Internet Explorer(IE) and Netscape Communicator. It provides the user with the ability to "see" links, and to activate the connected object. The "look and feel" of the links when viewing the compressed file is preferably consistent with standard browsers. The viewing application also displays information determined by extracted symbol information as one or more CTQ layers that overlay the engineering drawing and typically highlight manufacturing requirements. The viewing application provides the user with the ability to toggle the display of any layer.

The viewing application preferably provides basic navigation controls, such as pan and zoom, and has standard document viewing and printing features such as paging and batch print. The viewing application preferably provides the ability for an external application to pass in parameters that enable and disable its various functions via a Command line or CGI interface.

For a document that had link information extracted and saved to the RFQ format file as described above, the viewing application preferably highlights the region around the link in the document when the user's cursor passes over the link. The link's region was saved when the link information was extracted, as described above. For example, if the user left-clicks on the region when using the viewing application of the present invention, the link's connection information is evaluated by the viewing application. This connection information was also extracted and saved in the RFQ format file for the document, as described above. If the extracted link information indicates that the link is to an external URL, for example, the new location is preferably displayed in a web browser with no change to the image displayed in the viewing application. If the link is an internal link, for example, when the user left-clicks on the link region, the new page or document is preferably displayed by the viewing application.

While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A method of creating a compressed file for use in an electronic RFQ, comprising:

(a) receiving an electronic file for use in the electronic RFQ;

(b) if the received file is a text-based file with links, extracting link information from the file and storing the extracted link information in an output file;

(c) if the received file is a CAD file, extracting ISO symbol information from the file and storing the extracted symbol information in an output file;

(d) converting the received file to a raster image; and

(e) compressing the raster image into an electronic RFQ format file;

whereby, if an output file was created in step (b) or (c), the output file is used to generate a separate display layer that will display extracted information, and whereby the separate display layer is inserted into the electronic RFQ format file.

2. The method of claim 1, whereby the text-based file is a PDF file.

3. The method of claim 1, wherein step (b) additionally comprises:

(b) if the file is a text-based file with links,

(i) if the file is not a PDF file, converting the text-based file to a PDF file that includes the links;

(ii) extracting link information from the PDF file; and

(iii)storing the extracted link information in an output file.

4. The method of claim 1, wherein the compression in step (e) is a wavelet-based compression.

5. The method of claim 1, wherein the raster image is in TIFF format.

6. The method of claim 1, wherein the raster image is in BMP format.

7. A system for creating compressed files for use in an electronic RFQ, wherein the system receives electronic files for use in the electronic RFQ, comprising:

means for extracting link information from a text-based file and storing extracted link information in an output file;

means for extracting ISO symbol information from a CAD file and storing extracted symbol information in an output file;

means for converting the file to a raster image;

means for compressing the raster image into an electronic RFQ format file;

means for generating a separate display layer that will display extracted information; and

means for inserting the separate display layer into the electronic RFQ format file.

8. A machine-readable medium that includes instructions for creating a compressed file for use in an electronic RFQ, wherein such instructions, when executed by a processor, cause the processor to:

receive an electronic file for use in an electronic RFQ;

extract link information from the received file and store extracted link information in an output file, if the received file is a text-based file with links,

extract ISO symbol information from the file and store extracted symbol information in an output file, if the received file is a CAD file;

convert the file to a raster image;

compress the raster file into an electronic RFQ format file;

generate a separate display layer that will display extracted information and insert the separate display layer into the electronic RFQ format file, if information was extracted from the file

9. A method of compressing a CAD file that contains ISO symbols into an RFQ format file, whereby displaying the RFQ format file will cause the information stored in the ISO symbols to be displayed in a CTQ layer, comprising:

(a) receiving a drawing in a CAD file;

(b) parsing ISO symbol information from the drawing in the CAD file and storing the symbol information in a symbol output file;

(c) converting the drawing into a raster image;

(d) compressing the raster image to an RFQ format file; and

(e) inserting information from the symbol output file into the RFQ format file as a separate display layer, such that the symbol information is displayed as a CTQ layer in the RFQ format file.

10. The method of claim 9, wherein the symbol information stored in step (b) includes text descriptions of the symbols.

11. The method of claim 9, wherein the raster image in step (c) is TIFF format.

12. The method of claim 9, wherein the raster image in step (c) is BMP format.

13. The method of claim 9, wherein the compression in step (d) is wavelet-based compression.

14. The method of claim 9, wherein both symbol and text information for a symbol are displayed in the CTQ layer.

15. A system for compressing a CAD file that contains ISO symbols into an RFQ format file, whereby displaying the RFQ format file will cause the information stored in the ISO symbols to be displayed in a CTQ layer, comprising:

means for receiving a drawing in a CAD file;

means for parsing ISO symbol information from the drawing in the CAD file and storing the symbol information in a symbol output file;

means for converting the drawing into a raster image;

means for compressing the raster image to an RFQ format file; and

means for inserting the information from the symbol output file into the RFQ format file as a separate display layer, such that the symbol information is displayed as a CTQ layer in the RFQ format file.

16. A machine-readable medium that includes instructions for compressing a CAD file that contains ISO symbols into an RFQ format file, whereby displaying the RFQ format file will cause the information stored in the ISO symbols to be displayed in a CTQ layer, wherein such instructions, when executed by a processor, cause the processor to:

receive a drawing in a CAD file;

parse ISO symbol information from the drawing in the CAD file and store symbol information in a symbol output file;

convert the drawing into a raster image;

compress the raster image to an RFQ format file; and

insert the information from the symbol output file into the RFQ format file as a separate display layer, such that the symbol information is displayed as a CTQ layer in the RFQ format file.

17. A method of extracting link information from a page in a PDF file and reinserting the link information into an RFQ format file, comprising:

(a) determining if there are links on the page;

(b) if there are links, creating a link output file for the page and writing link properties for each link into the link output file;

(c) converting the page to a raster image;

(d) compressing the raster image into an RFQ format file; and

(e) if there are links, adding link information from the link output file to the RFQ format file.

18. The method of claim 17, wherein the links are hypertext links.

19. The method of claim 17, wherein the link output file is an XML file.

20. The method of claim 17, wherein the raster image is in TIFF format.

21. The method of claim 17, wherein the raster image is in BMP format.

22. The method of claim 17, wherein the compression is wavelet-based compression.

23. The method of claim 17, wherein the link properties in step (b) include document page number, link number on the page, coordinates of the top of the link region, coordinates of the left of the link region, width of the link region, height of the link region, color of the link and type of link.

24. The method of claim 23, wherein the coordinates are mapped to the rasterized image using the coordinate system and DPI of the original document.

25. A system for extracting link information from a page in a PDF file and reinserting the link information into an RFQ format file, comprising:

means for determining if there are links on the page;

means for creating a link output file for the page and writing link properties for each link into the link output file;

means for converting the page to a raster image;

means for compressing the raster image into an RFQ format file; and

means for adding link information from the link output file to the RFQ format file.

26. A machine-readable medium that includes instructions for extracting link information from a page in a PDF file and reinserting the link information into an RFQ format file, wherein such instructions, when executed by a processor, cause the processor to:

determine if there are links on the page;

create a link output file for the page and writing link properties for each link into the link output file, if there are links;

convert the page to a raster image;

compress the raster image into an RFQ format file; and

add the link information from the link output file to the RFQ format file.